



$J/\psi \rightarrow \mu\mu$ Update

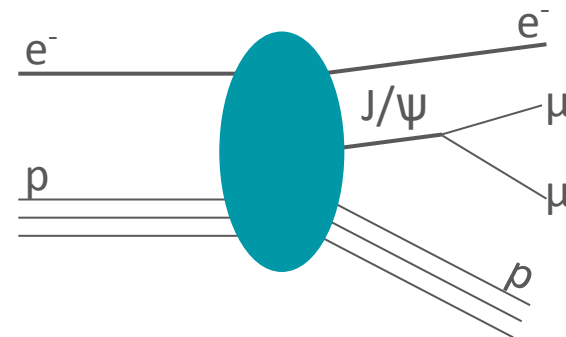
EDT Meeting 17/11/25

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Progress in last week:



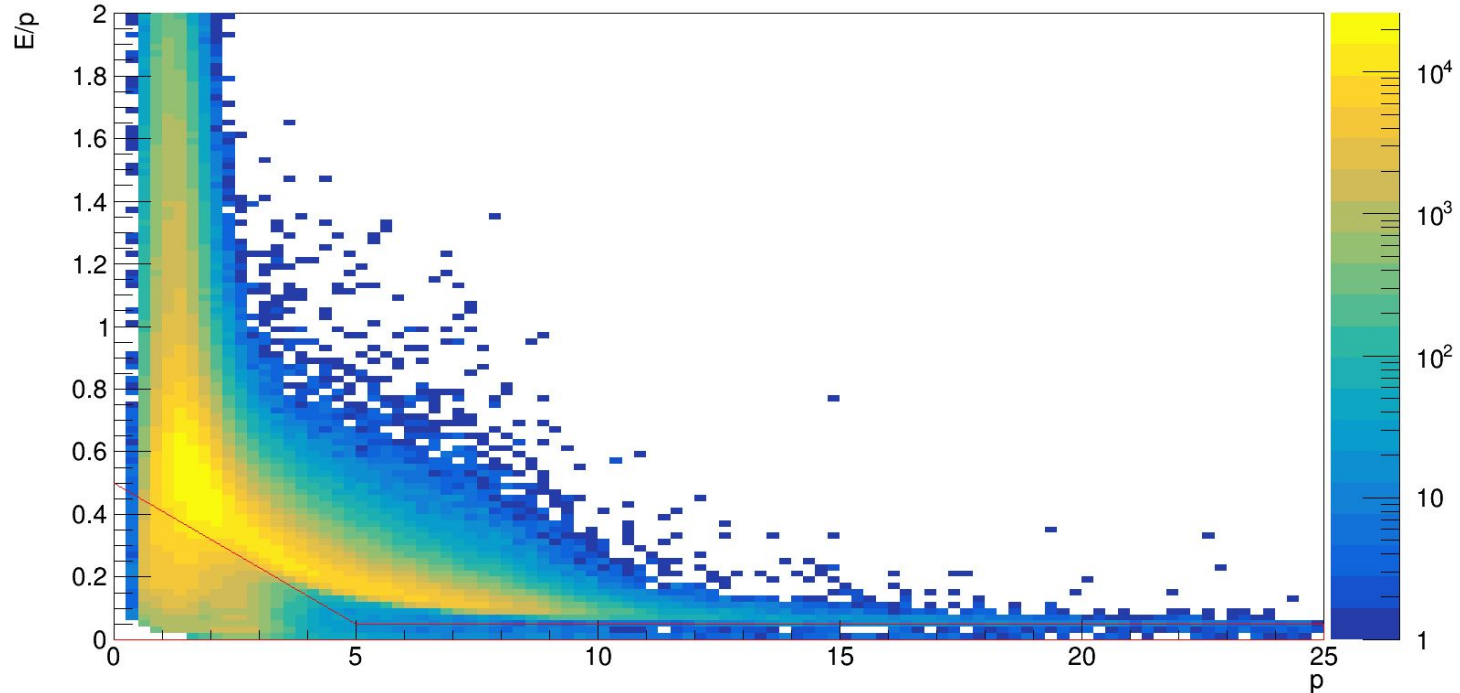
- Enforced exclusivity in analysis script:
 - Good electron
 - Beam proton found
 - Two good muon signals
 - Muon scattering angle $\approx 180^\circ$
 - Missing mass ≈ 0 GeV
 - Invariant mass ≈ 3.1 GeV
- Optimising cuts for the muon finder.
- Produced more kinematics plots.



HCal E/p cut ($J/\psi \rightarrow \mu\mu$)



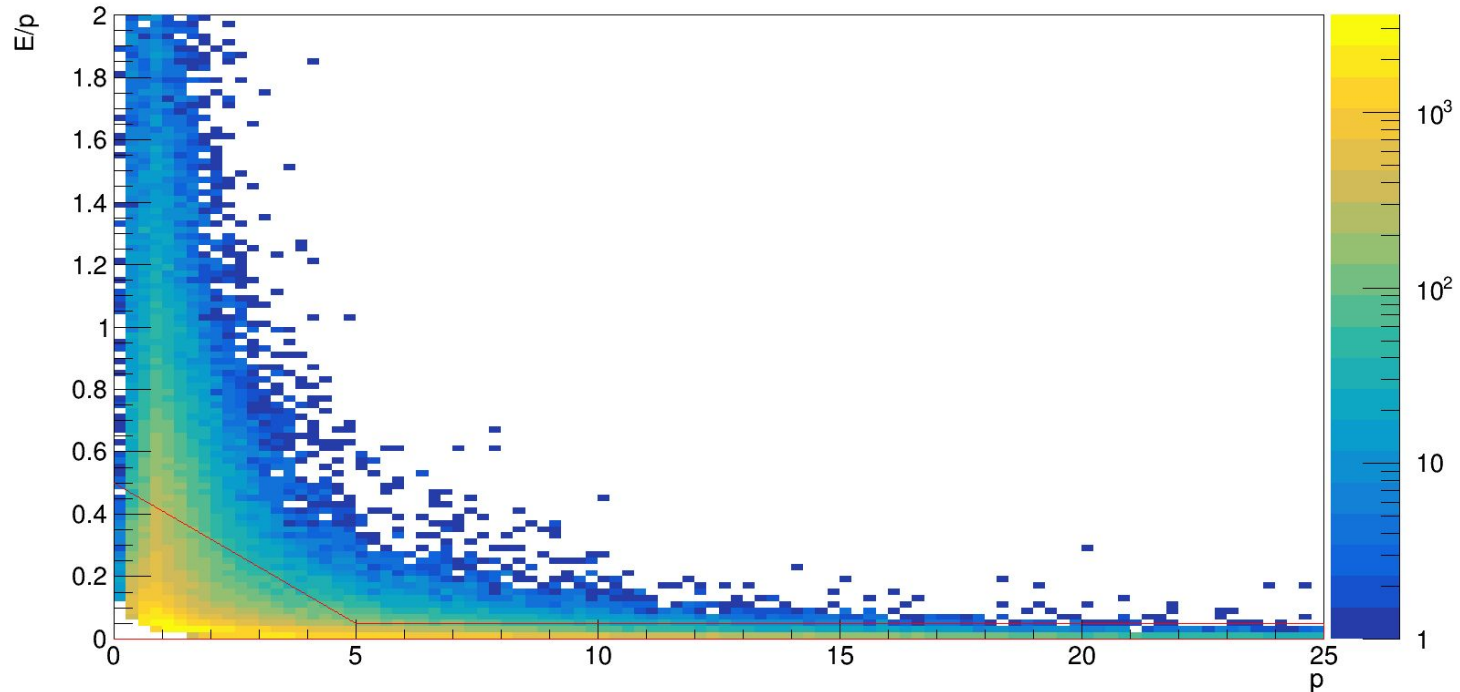
Hcal Energy vs Track Momentum for Muons



HCal E/p cut (DIS π)



Hcal Energy vs Track Momentum for Pions

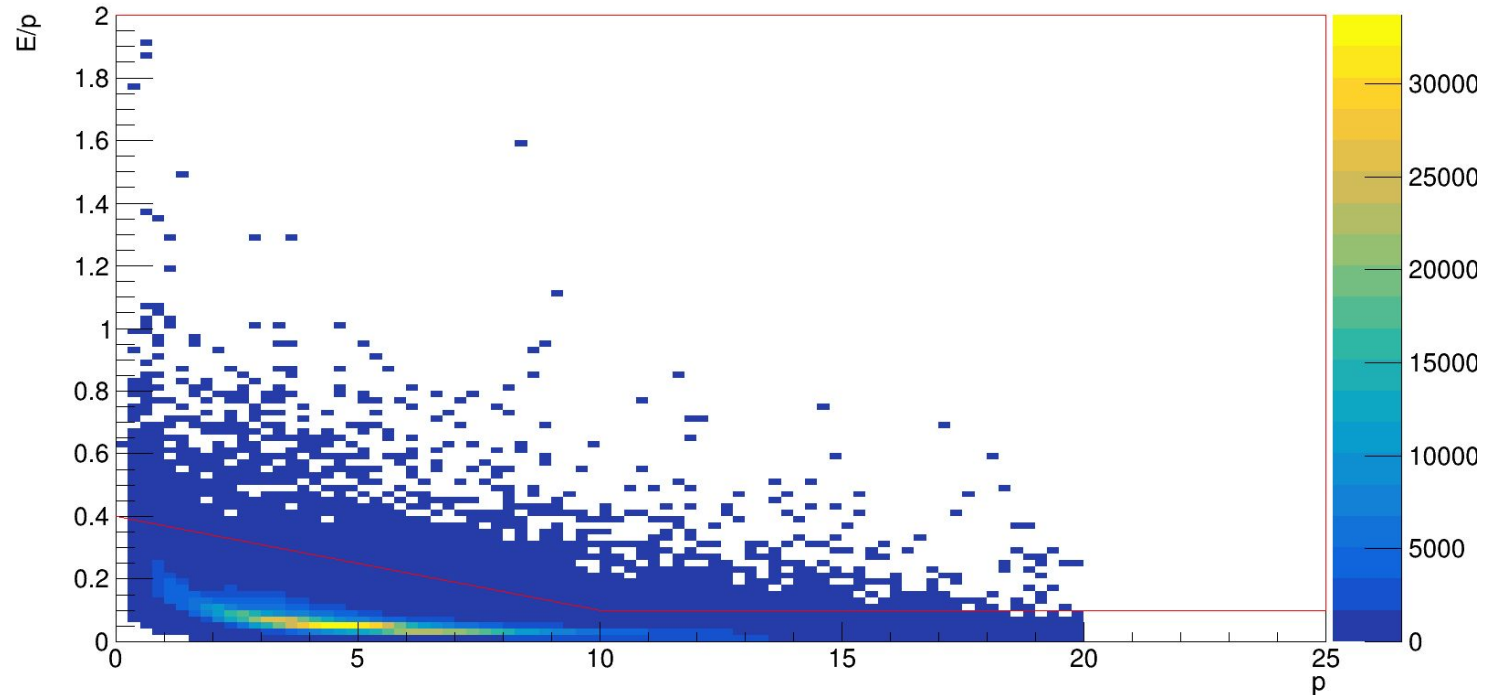


ECal E/p cut ($J/\psi \rightarrow \mu\mu$)



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Ecal Energy vs Track Momentum for Muons

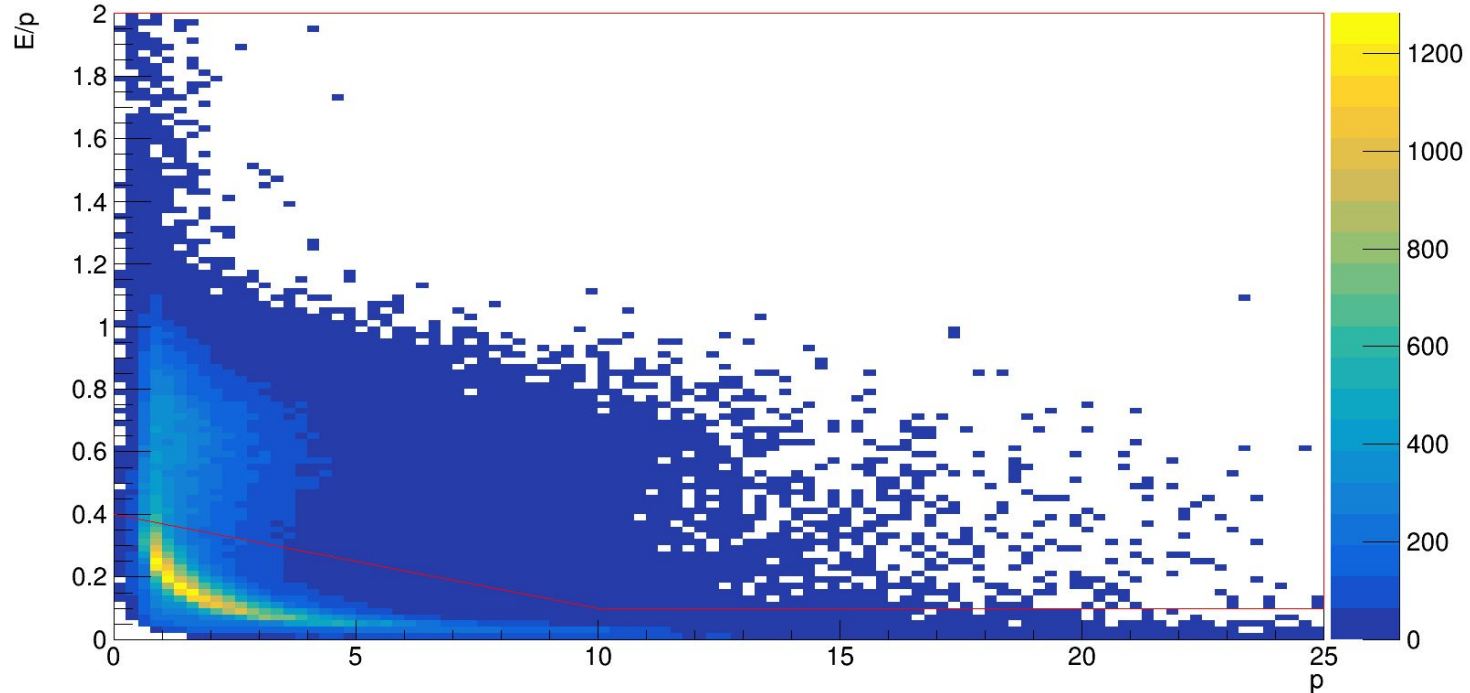


ECal E/p cut (DIS π)



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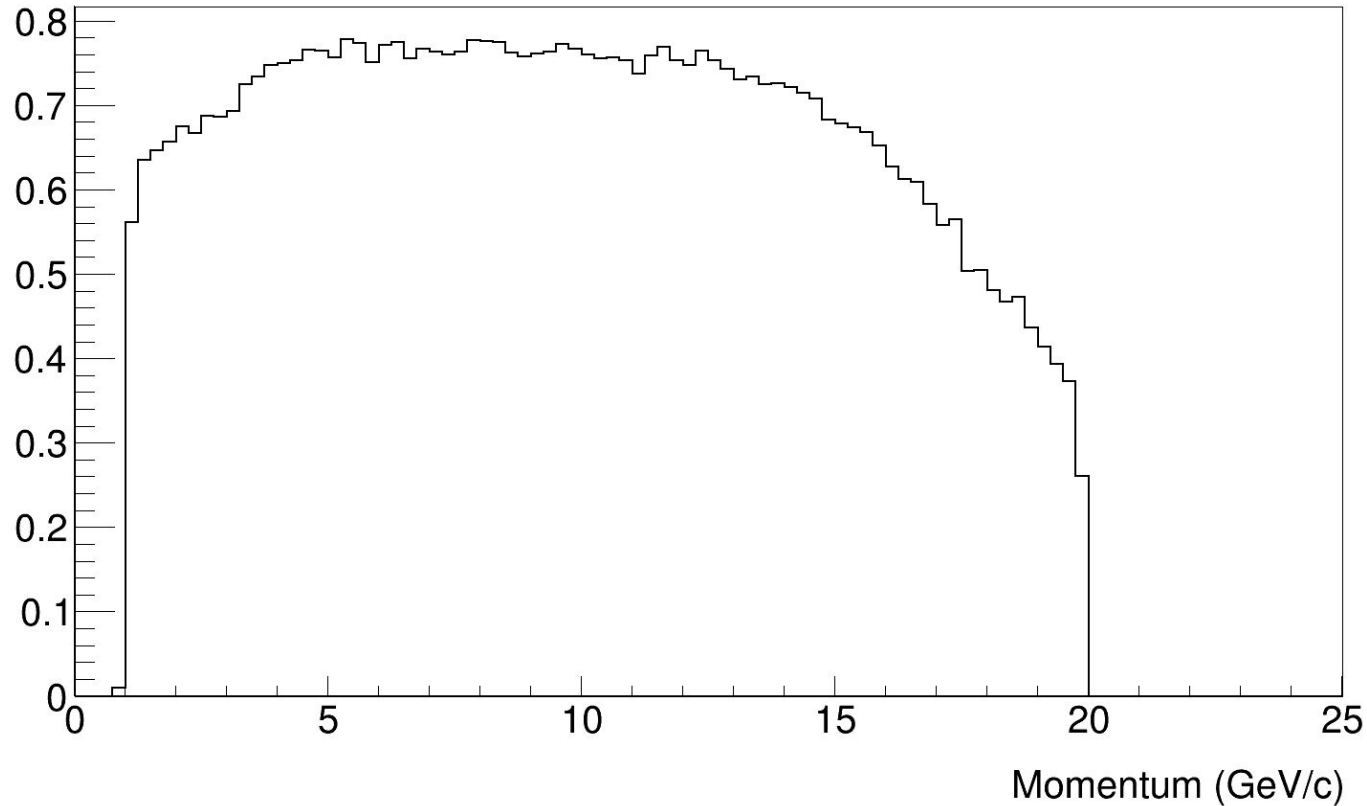
Ecal Energy vs Track Momentum for Pions



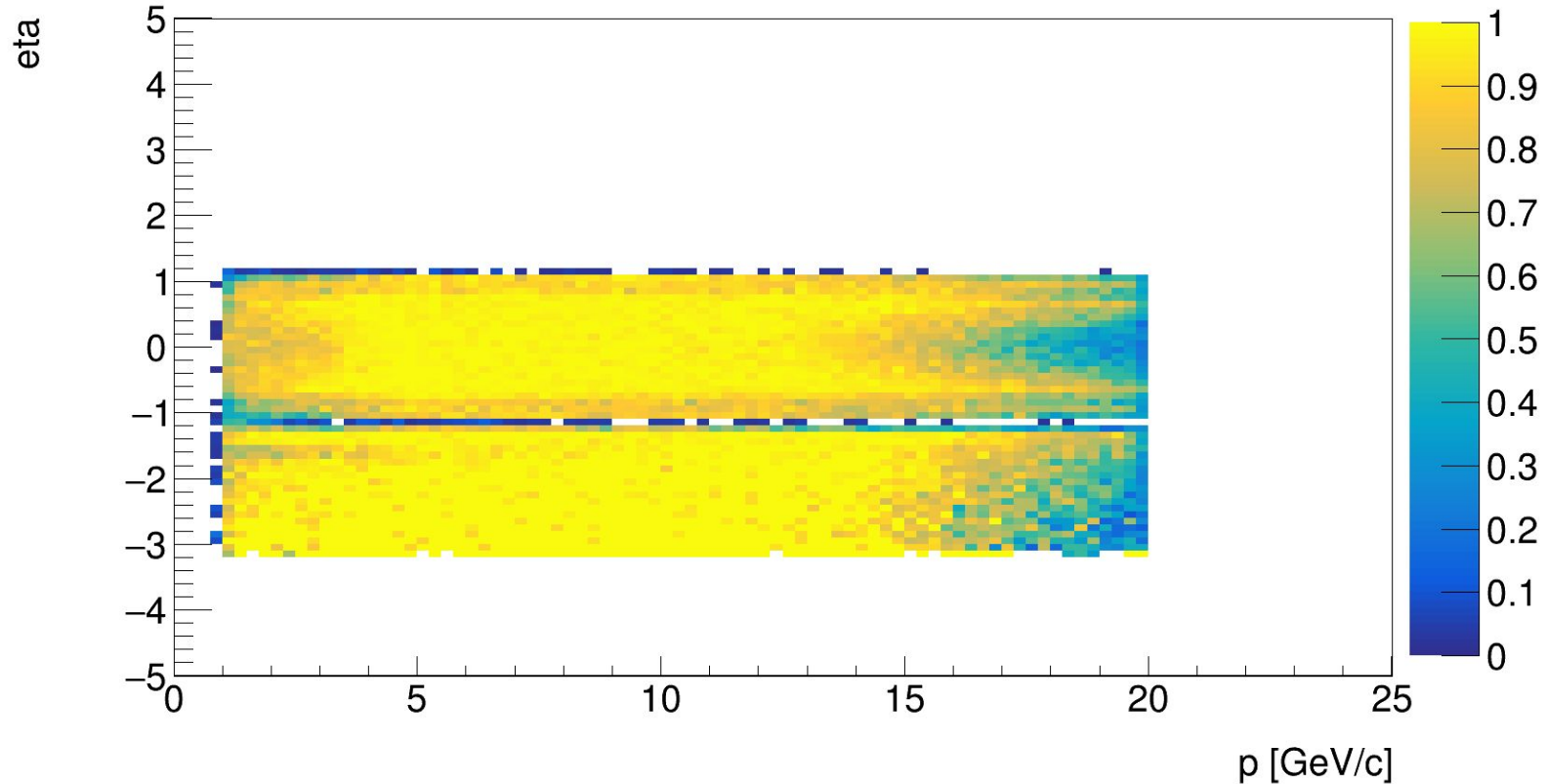
Muon Efficiency (μ/π)



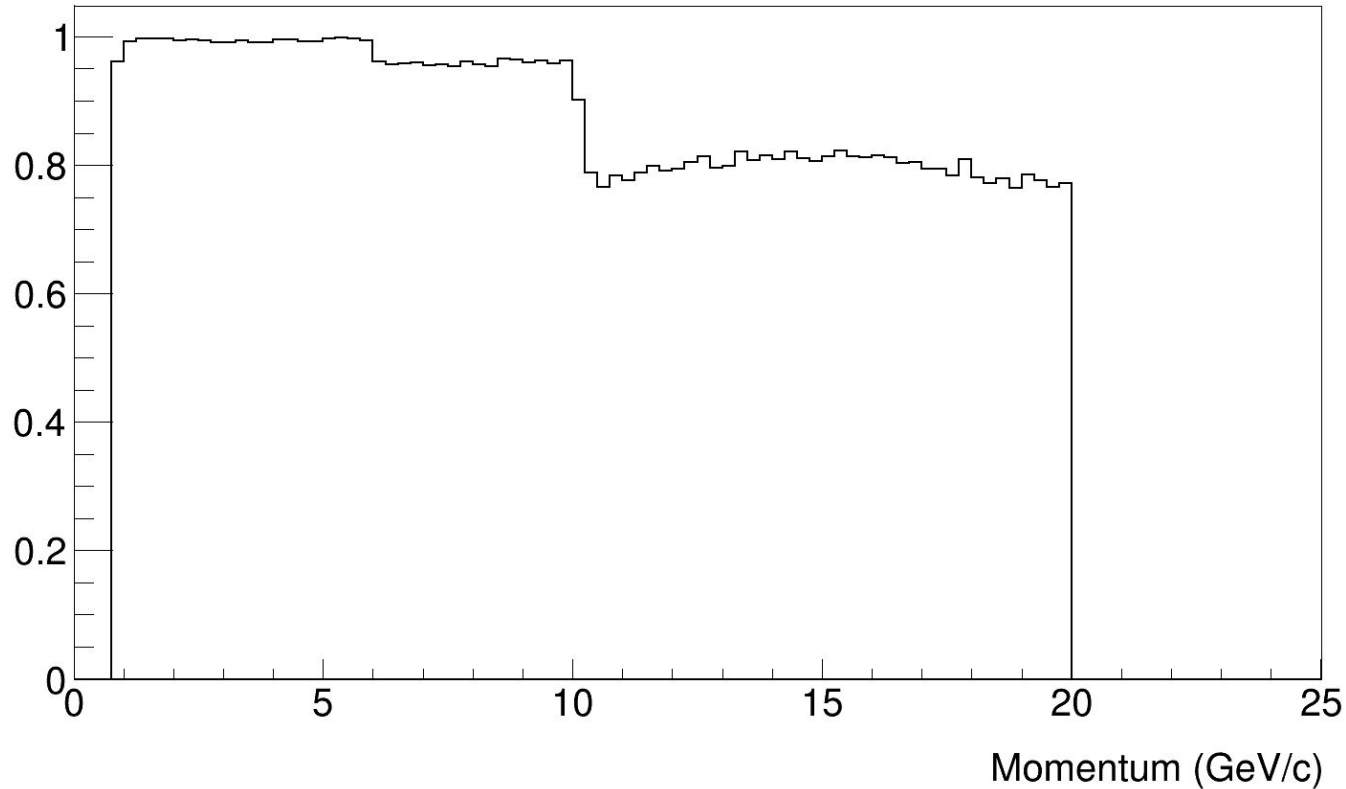
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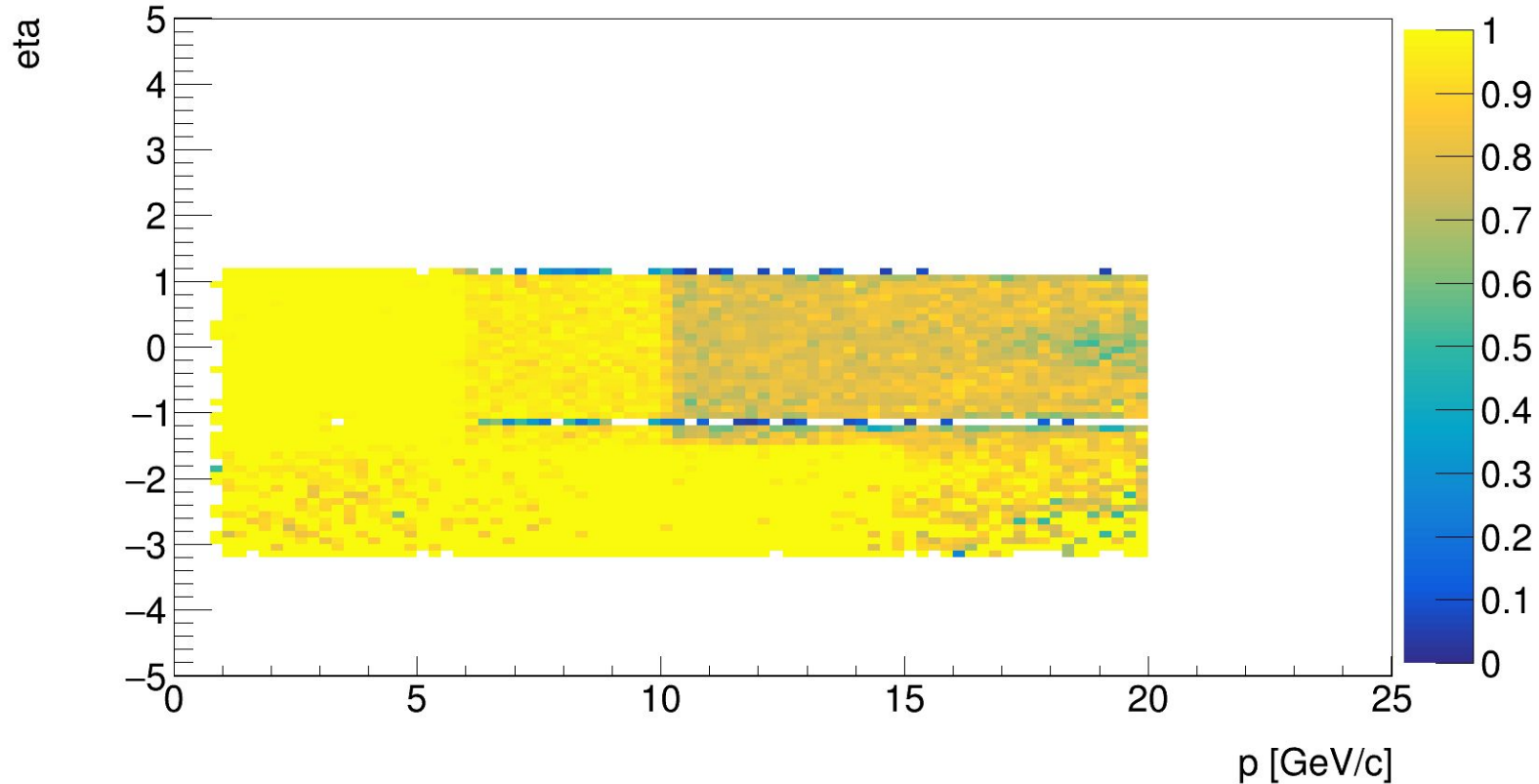
Muon Efficiency (μ/π)



Muon Purity (μ/π)



Muon Purity (μ/π)

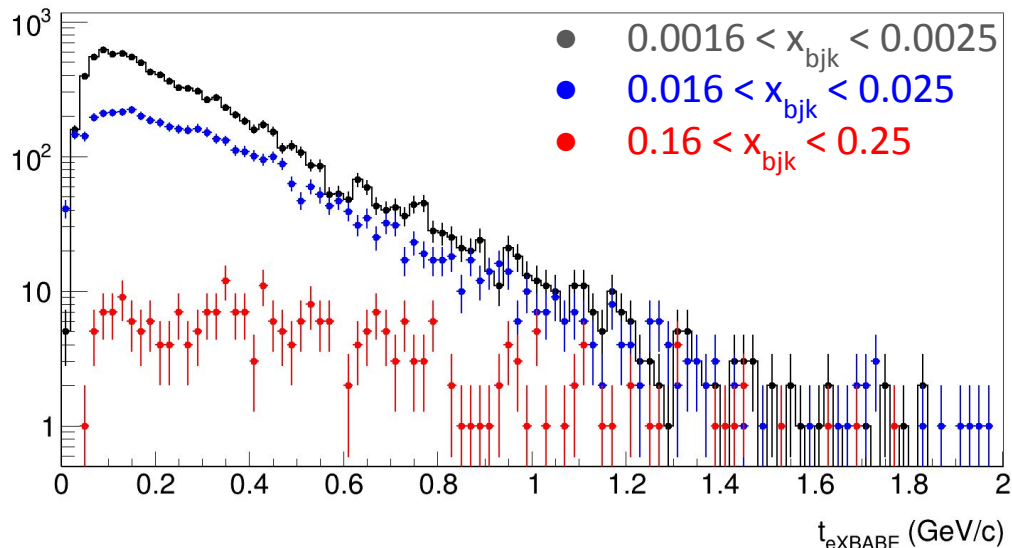


Current to do list



- Change to continuous E/p cuts?
- Run analysis script on the sim campaign files.
- Investigate systematics uncertainties.
- Continue adding to the analysis note.

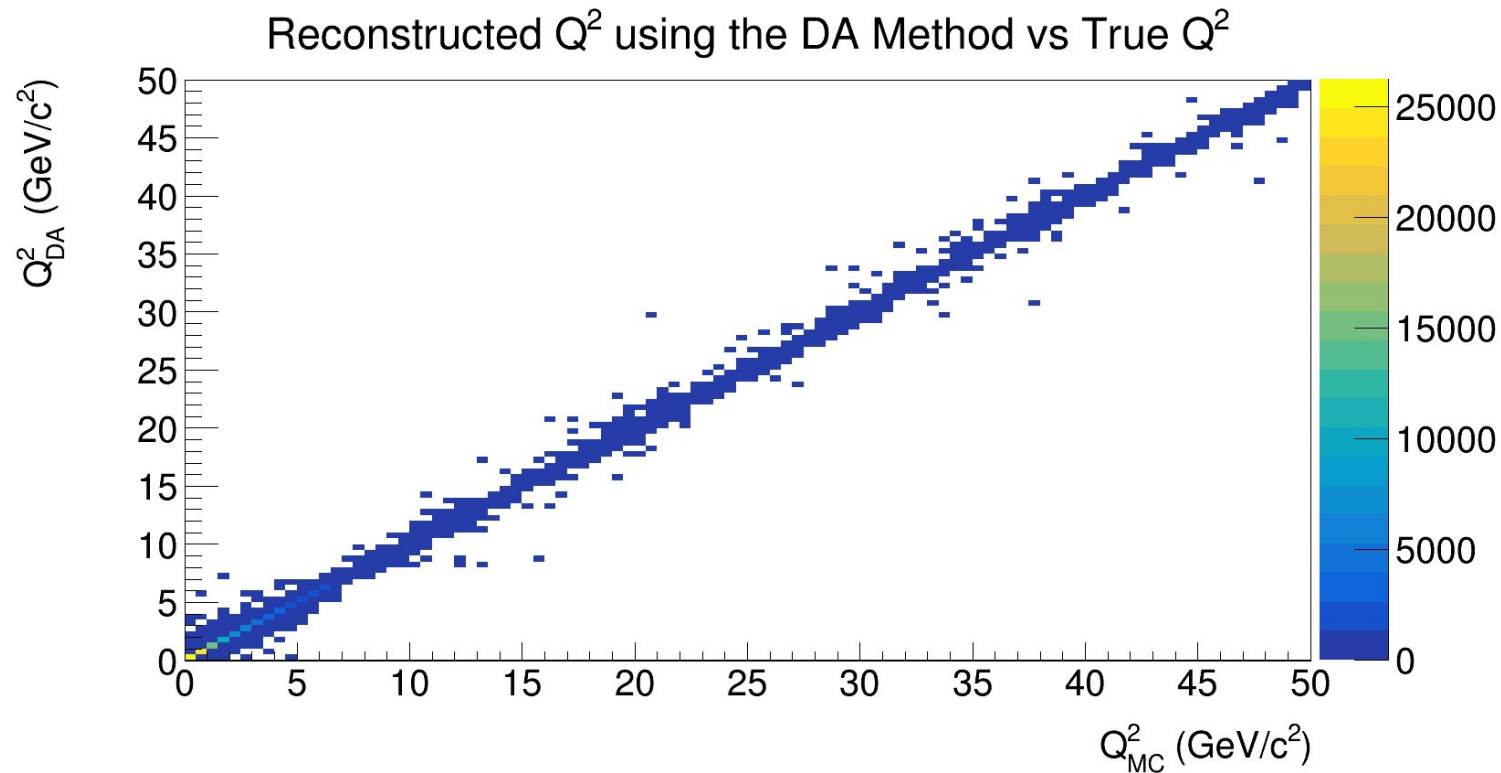
Reconstructed t distribution with bjorken x binning



Kinematics - Q^2 ($J/\psi \rightarrow \mu\mu$)



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Kinematics - t ($J/\psi \rightarrow \mu\mu$)



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Reconstructed t using the eXBABE Method vs True t

